

REMARKS

Applicants respectfully request consideration of the subject application as amended herein. This Amendment is submitted in response to an Office Action mailed on March 14, 2001. In this Amendment, claims 1, 4, 5, 8, 9, 10, 11, 13, 19, 24, 29 and 31 have been amended.

Rejections under 35 U.S.C. § 112, second paragraph

Claim 8

Claim 8 was rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 has been amended to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Applicant respectfully submits that claim 8 as amended, satisfy the requirements of 35 U.S.C § 112, second paragraph and respectfully requests the withdrawal of the rejection of the claims under § 112.

Rejections under 35 U.S.C. § 103

Claims 1-4, 7, 9-10 and 13-28

Claims 1-4, 7, 9-10 and 13-28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takano (U.S. Patent No. 5,983,246) in view of de Souza, et al. (U.S. Patent No. 5,848,418). Claims 5 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takano (U.S. Patent No. 5,983,246) and de Souza, et al. (U.S. Patent No. 5,848,418) in view of Iijima (U.S. Patent No. 5,845,304). Claims 6 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takano (U.S. Patent No. 5,983,246) and de Souza, et al. (U.S. Patent No. 5,848,418) as applied to claims 1 and 9 above, and further in view of Ho, et al. (Decision Combination in Multiple Classifier Systems).

Takano discloses a document classifying system for classifying documents distributed and existent in a network environment. In the system of Takano, documents are classified based on their bibliographic items. Specifically, in Takano, each document entering the classification system has an associated bibliographic item prepared by the

service provider in advance (i.e., before, the documents are classified by the Takano system) (col. 6, lines 48-51). Takano then classifies the documents based on their bibliographic items. Each bibliographic item constitutes a “characteristic feature of the content of the document,” i.e., a set of keywords and their frequency of appearance in the document (col. 8, lines 51-67).

The present invention, in contrast, classifies documents that may not have associated bibliographic items. The present invention as claimed in claims 1-28 analyzes the textual and graphical content of previously unclassified electronic documents and determines textual and graphical profiles of each document based on these analyses. The textual and graphical profiles of the document are then used to classify the document and place them in the directory structure defined by the user. As a result, the document is automatically classified and stored in a directory in which the document would most likely be stored by the user, without requiring any user interaction with the document. Takano does not teach or suggest at least the above pertinent features of the present invention as claimed in claims 1-28.

De Souza discloses a system for finding objectionable material in electronic files. Contrary to the present invention as claimed in claims 1-28, the system of De Souza does not determine a textual profile and a graphical profile of the document being classified based on analysis of textual and graphical content of the document. Neither does De Souza classify the documents based on their textual and graphical profiles, as claimed in claims 1-28. Thus, De Souza does not teach or suggest at least the features that are lacking in Takano.

Iijima and Ho do not help Takano and De Souza as none of them teach or suggest at least analyzing textual and graphical content of an electronic document to determine textual and graphical profiles of the document and classifying this document based on its textual and graphical profiles. Accordingly, the above references either alone or in combination do not teach each and every element of the invention as claimed in claims 1-28. Therefore, the combination cannot render obvious Applicants’ invention as claimed in claims 1-28, and Applicants respectfully request the withdrawal of the rejection of the claims under 35 U.S.C. § 103(a) over the combination.

Claims 29-32

Claims 29-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mahoney (U.S. Patent No. 5,889, 886). Mahoney discloses a method and apparatus for analyzing image data. Specifically, Mahoney analyzes image data representing images containing text to partition the image into running and non-running text regions. Running text is text which comprises the body matter of a document. Non-running text is text which is not part of the body matter and includes tables, headings, captions, etc. Based on the analysis, the characteristics of running text regions are utilized to identify such regions and to subsequently group all non-running text regions into related groups.

Mahoney does not teach or suggest determining a directory in which the document scanned by the document scanning device should be placed, as does the presently claimed invention. In the present invention as claimed in claim 29, the processor analyzes the content of the scanned document and determines a directory in a mirror directory structure in which the document should be placed based on the analysis of the document content and a document classification profile of an existing document directory structure. The document is then automatically stored in this directory of the mirror directory structure, thereby relieving the user of the duty of manually selecting a directory for the new document. Mahoney neither analyzes the content of the document nor determines a directory in a document directory structure for storing the document in accordance with the document's content. Thus, Mahoney lacks at least these pertinent limitations claimed in claims 29-32 of the present invention. Accordingly, Applicants respectfully submit that Applicants' invention as claimed in claims 29-32 is not rendered obvious by Mahoney, and respectfully request the withdrawal of the rejection under 35 U.S.C. § 103(a).

In view of the foregoing amendments and remarks, Applicants respectfully submit that the pending claims are in condition for allowance. Applicants respectfully request reconsideration of the application and allowance of the pending claims.

Other References Made of Record

Applicant has reviewed the other referenced cited by the Examiner and finds them no more relevant than the art relied on in rejecting the claims.

If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact Marina Portnova at (408) 720-8300.

Deposit Account Authorization

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicant hereby requests such extension.

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Respectfully submitted,
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VERSION OF CLAIMS WITH MARKINGS:

1 1. (Amended Twice) A method for document classification comprising:
2 analyzing textual content and graphical [properties] content of a previously
3 unclassified electronic document [using text data and image data] to determine a textual
4 profile and a graphical profile of the [entire] electronic document;
5 generating a classification of the document based on the textual profile and the
6 graphical [properties] profile; and
7 storing the electronic document in a pre-existing directory structure based on the
8 classification.

1 4. (Amended) The method of claim 1, wherein analyzing textual [properties]
2 content of an electronic document comprises:
3 determining characteristic words of the document;
4 determining a frequency for each characteristic word; and
5 building a frequency table based on the frequency associated with each
6 characteristic word.

1 5. (Amended) The method of claim 1, wherein analyzing graphical
2 [properties] content of an electronic document comprises:
3 determining a point set corresponding to the electronic document, wherein points
4 of the point set correspond to end points of lines;
5 determining a density of points within the point set;

6 generating a document profile based, at least in part, on the density of points
7 within the point set.

1 8. (Amended) The method defined in Claim 1 further comprising building
2 the pre-existing directory structure by extracting graphical and text features from
3 documents in a directory-based memory to obtain a document classification profile of
4 each subdirectory in the directory-based memory.

1 9. (Amended Twice) A software product including a machine-readable
2 medium having stored thereon sequences of instructions, which, when executed by a
3 processor, cause the processor to:
4 analyze textual content and graphical [properties] content of a previously
5 unclassified electronic document [using text data and image data] to determine a textual
6 profile and a graphical profile of the [entire] electronic document;
7 generate a classification of the document based on the textual profile and the
8 graphical [properties] profile; and
9 store the electronic document in a pre-existing directory structure based on the
10 classification.

1 10. (Amended) The machine-readable medium of claim 9, wherein the
2 sequences of instructions that cause the processor to analyze textual [properties] content
3 of an electronic document further comprise sequences of instructions that cause the
4 processor to:
5 determine characteristic words of the document;

6 determine a frequency for each characteristic word; and
7 build a frequency table based on the frequency associated with each characteristic
8 word.

1 11. (Amended Twice) The machine-readable medium of claim 9, wherein the
2 sequences of instructions that cause the processor to analyze graphical [properties]
3 content of an electronic document further comprise sequences of instructions that cause
4 the processor to:
5 determine a point set corresponding to the electronic document, wherein points of
6 the point set correspond to end points of lines;
7 determine a density of points within the point set;
8 generate a document profile based, at least in part, on the density of points within
9 the point set.

1 13. (Amended Twice) A method for document classification comprising:
2 analyzing documents in a pre-existing document directory structure to determine a
3 document classification profile of the pre-existing document directory structure;
4 generating a mirror directory structure based on the pre-existing document
5 directory structure;
6 receiving a previously unclassified electronic document;
7 analyzing textual content and graphical [properties] content of the electronic
8 document [using text data and image data] to determine a textual profile and a graphical
9 profile of the [entire] electronic document; and

10 placing the electronic document in the mirror directory structure based on the
11 document classification profile of the pre-existing document directory structure, [results
12 of] the textual profile [analysis] of the document, and [results of] the graphical [analysis]
13 profile of the document.

1 19. (Amended Twice) A computer-readable medium having stored thereon
2 sequences of instructions which, when executed by a processor, cause the processor to:
3 analyze a pre-existing document directory structure to determine a document
4 classification profile of the pre-existing document directory structure;
5 generate a mirror directory structure based on the pre-existing document directory
6 structure;
7 receive a previously unclassified electronic document;
8 analyze textual content and graphical [properties] content of the electronic
9 document [using text data and image data] to determine a textual profile and a graphical
10 profile of [the] entire electronic document; and
11 place the electronic document in the mirror directory structure based on the
12 document classification profile of the pre-existing document directory structure, the
13 textual profile of the document, and the graphical profile of the document.

1 24. (Amended Twice) An apparatus comprising:
2 means for analyzing a pre-existing document directory structure to determine
3 document classification profile of the pre-existing document directory structure;
4 means for generating a mirror directory structure based on the pre-existing
5 document directory structure;

6 means for receiving a previously unclassified electronic;
7 means for analyzing textual content and graphical [properties] content of the
8 electronic document [using text data and image data] to determine a textual profile and a
9 graphical profile of the [entire] electronic document; and
10 means for placing the electronic document in the mirror directory structure based
11 on the document classification profile of the pre-existing document directory structure,
12 the textual profile of the document, and the graphical profile of the document.

1 29. (Amended Twice) A document processing system comprising:
2 a document scanning device;
3 a document storage device coupled to the document scanning device, wherein the
4 document storage device is organized as a document directory structure having multiple
5 directories, and further wherein the document storage device has a mirror directory
6 structure having multiple directories organized based on the document directory
7 structure; and
8 a processor coupled to the document scanning device and to the document storage
9 device, wherein the processor analyzes content of a document scanned by the document
10 scanning device [to determine], determines a directory in the mirror [document] directory
11 structure in which the document should be placed based on the analysis of document
12 content and a document classification profile of the document directory structure, and
13 stores the document in [a corresponding] the directory in the mirror directory structure.

1 31. (Amended Twice) The document processing system of claim 29 wherein
2 the processor analyzes files stored in the document directory structure to determine

- 3 content and generates [a] the document classification profile of the document directory
- 4 structure based on the analysis.